APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/643,210	08/22/2000	Tom Heil	99-352	8403

24319	7590	04/13/2004

LSI LOGIC CORPORATION
1621 BARBER LANE
MS: D-106 LEGAL
MILPITAS, CA 95035

EXAMINER
KADING, JOSHUA A

ART UNIT	PAPER NUMBER
2661	5

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)	
Office Action Summary	09/643,210	HEIL, TOM	
	Examiner	Art Unit	
	Joshua Kading	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2004*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,11-15 and 22* is/are rejected.

7)☒ Claim(s) *3, 4, 6-10, and 16-21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

· The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

5

Claims 1, 2, 5, 11-15, and 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Brendel et al. (U.S. Patent 5,774,660) in view of Opher et al. (U.S.

Patent 5,345,558).

10   In regard to claim 1, Brendel et al. disclose "a storage network having a host

device operative to access stored data, a plurality of storage devices operative to store

the stored data and a switched fabric connecting the host device and the plurality of

storage devices to communicate data access requests and transfer data between the

host device and the storage devices, the switched fabric comprising:

15   a host-side link connected to the host device (figure 4, where element 10 is the

host device and the link between the host device and element 32 is the host-side link)

and including a host-side interface connected to the host device, the host-side interface

sending and receiving data to and from the host device (figure 4, where the physical

links between elements 10 and 32 constitute a host-side interface and clearly send and

20   receive data between the host-side interface and the host device);

a plurality of storage-side links connected to the plurality of storage devices

(figure 4, where elements 36, 24 and 36B, 24' are the storage devices and the links

between them and element 32 are the storage-side links) and each of the storage-side

links including a storage-side interface connected to a corresponding one of the storage

devices, the storage-side interface sending and receiving data to and from the

corresponding storage device (figure 4, where the physical links between 24 and 24' are

5   storage-side interfaces and clearly send and receive data from the storage device); and

a switch... connected to the host-side link and the storage-side links and

operative to establish communication channels between the host-side link and any of

the storage-side links for transferring message packets including the data between the

host device and any of the storage devices (figure 4, element 32; although element 32

10   is specified as a router, it performs the same general function of switching message

packets to the appropriate destination as a switching fabric includes the switch as can

be read in col. 4, lines 51-54), the switch matrix not establishing communication

channels between the storage-side links (figure 4 shows no communication channels

between the storage-side links)."

15   However, Brendel et al. lacks "a switch matrix connected to the host-side link..."

Opher et al. however, disclose "a switch matrix... (figure 2, element 202 is a switch

fabric that will be used as element 32 in Brendel; figure 8A are the contents of element

202; and col. 10, lines 8-13 show that the contents of element 202 can include

"alternate switching fabrics" which include a matrix switching fabric as can be read in

20   col. 2, lines 36-45)".

It would have been obvious to one with ordinary skill in the art at the time of

invention to include the storage network with the matrix switch for the purpose of

transporting packets of data to their appropriate destinations. The motivation is to

effectively communicate data between two or more ends.

In regard to claim 2, Brendel et al. and Opher et al. disclose the network of claim

5   1. However, Brendel et al. lack "the switched fabric further comprises a switch

connected to the host device and the storage devices; and the host-side link, the

plurality of storage-side links and the switch matrix are integrated in the switch in a

single integrated circuit." Opher et al. however, disclose "the switched fabric further

comprises a switch connected to the host device and the storage devices (figure 8A

10   shows the contents of switch fabric 32 of Brendel et al. and where element 806 is a

switch that is connected to the host device by connections 0 and 1 and connected to the

storage devices through the outputs of stage 4 switches); and the host-side link, the

plurality of storage-side links and the switch matrix are integrated in the switch in a

single integrated circuit (Opher et al. does not explicitly say that "the host-side link, the

15   plurality of storage-side links and the switch matrix are integrated in the switch in a

single integrated circuit" however, Opher et al. does not need to explicitly say this as

integrating these items on an IC is a design choice and the components that would be

integrated onto the IC are still taught by Opher et al.)." It would have been obvious to

one with ordinary skill in the art at the time of invention to include the switch with the

20   network of claim 1 for the reasons and motivation as in claim 1.

In regard to claim 5, Brendel et al. disclose "storage network of claim 1 further

comprising:

a second host device, in addition to the host device first aforesaid, connected to

the switched fabric (figure 4, element 10A is the second host device which is connected

5   to the switch fabric 32);

and wherein:

the switched fabric further comprises a second host-side link, in addition to

the host-side link first aforesaid (figure 4, where the link between the host device 10A

and element 32 is the host-side link);

10   the second host-side link connects to the second host device and includes

a second host-side interface, in addition to the host-side interface first aforesaid,

connected to the second host device; the second host-side interface sends and

receives the data to and from the second host device (figure 4, where the physical links

between elements 10A and 32 constitute a second host-side interface and clearly send

15   and receive data between the host-side interface and the host device); and

the switch... also connects to the second host-side link and is further

operative to establish the communication channels between the second host-side link

and any of the storage-side links for transferring the message packets including the

data between the second host device and any of the storage devices (figure 4 where

20   the switch matrix of element 32 is clearly connected to the host devices and the storage

devices for communicating message packets)."

However, Brendel et al. lack "the switch matrix also connects channels..." Opher

et al. however, further disclose "the switch matrix also connects channels...(figure 2,

element 202 is a switch fabric that will be used as element 32 in Brendel; figure 8A are

the contents of element 202; and col. 10, lines 8-13 show that the contents of element

5   202 can include "alternate switching fabrics" which include a matrix switching fabric as

can be read in col. 2, lines 36-45)."

It would have been obvious to include the switch matrix with the network of claim

1 for the same reasons and motivation as in claim 1.

10   In regard to claim 11, Brendel et al. and Opher et al. disclose the network as

defined in claim 1. However, Brendel et al. lack "the switched matrix comprises an edge

switch." Opher et al. however, disclose "the switched matrix comprises an edge switch

(figure 8A, where element 807 acts as an edge switch of the switching matrix as it is

one of the last switches of the matrix before the data is transmitted to a connected

15   device)." It would have been obvious to one with ordinary skill in the art at the time of

invention to include the edge switch with the network of claim 1 for the same reasons

and motivation as in claim 1.

In regard to claim 12, Brendel et al. and Opher et al. disclose the network of

20   claim 1. However, Opher et al. lack "a combination of the host device, the storage

devices and the switched fabric comprises a data processing unit." Brendel et al.

however, further disclose "a combination of the host device, the storage devices and the

switched fabric comprises a data processing unit (figure 4, element 36, 24 and 10 both

are a data processing unit in the sense that they both receive requested data and

processing it for the user who requested it)." It would have been obvious to one with

ordinary skill in the art at the time of invention to include the data processing unit with

5   the network of claim 1 for the same reasons and motivation as in claim 1.

In regard to claim 13, Brendel et al. and Opher et al. disclose the network of

claim 12. However, Opher et al. lack "the data processing unit comprises a storage

server." Brendel et al. however, further disclose "the data processing unit comprises a

10   storage server (figure 4, element 36, 24 is the storage server)." It would have been

obvious to one with ordinary skill in the art at the time of invention to include the storage

server with the network of claim 12 for the same reasons and motivation as in claim 12.

In regard to claim 14, Brendel et al. and Opher et al. disclose the network of

15   claim 12. However, Opher et al. lack "the data processing unit comprises a personal

computer." Brendel et al. however, further disclose "the data processing unit comprises

a personal computer (figure 4, element 10 where the "client browser" is a user

requesting information from the World Wide Web on a personal computer as can be

read in col. 2, lines 18-20)." It would have been obvious to one with ordinary skill in the

20   art at the time of invention to include the personal computer with the network of claim 12

for the same reasons and motivation as in claim 12.

In regard to claim 15, Brendel et al. disclose "a method of communicating data between a host device and a plurality of storage devices through a switched fabric comprising the steps of:

sending a data access request from the host device to the switched fabric (col. 2, lines 18-24 where the system of figure 1 works similarly to the system of figure 4 except that the data access requests and data are sent through switch 32 as can be read in col. 42-47);

directing the data access request to a selected one of the plurality of storage devices connected to the switched fabric (col. 4, lines 51-54);

sending the data access request from the switched fabric to the selected storage device (col. 4, lines 51-54); and

transferring data between the host device and the selected storage device in response to the data access request through the established data transfer path in the switched fabric between the host device and the selected storage device (col. 4, lines 59-64)."

However, Brendel et al. lack "establishing data transfer paths through the switched fabric from the host device to any of the storage devices and not between the storage devices; establishing one of the data transfer paths between the host device and the selected storage device through the switched fabric."

Opher et al. however, disclose "establishing data transfer paths through the switched fabric from the host device to any of the storage devices and not between the storage devices (figure 8A where it is clear from the paths between stages that there

are several data transfer paths through the switched fabric 202 from the host device at

one end to the storage devices at the other);

establishing one of the data transfer paths between the host device and the

selected storage device through the switched fabric (figure 8A where the darkened path

5   from input port 5 to output port 13 constitutes a single data transfer path setup between

a the host device and the selected storage device)."

It would have been obvious to one with ordinary skill in the art at the time of

invention to include the establishing data transfer paths with the method of

communicating so as to allow the data to easily flow through the network from one point

10   to another. The motivation being effective data transfer through the network.

In regard to claim 22, Brendel et al. disclose "a storage network having a host

device operative to access stored data, a plurality of storage devices operative to store

the stored data and a switched fabric connecting the host device and the plurality of

15   storage devices to communicate data access requests and transfer data between the

host device and the storage devices, the switched fabric comprising:

a switch connected to the host device and the storage devices and comprising a

single integrated circuit (figure 4, element 32; although element 32 is specified as a

router, it performs the same general function of switching message packets to the

20   appropriate destination as a switching fabric includes the switch as can be read in col.

4, lines 51-54);

a host-side link integrated in the switch and connected to the host device (figure

4, where element 10 is the host device and the link between the host device and

element 32 is the host-side link) and including a host-side interface between the switch

and the host device, the host-side interface sending and receiving data to and from the

5   host device (figure 4, where the physical links between elements 10 and 32 constitute a

host-side interface and clearly send and receive data between the host-side interface

and the host device);

a plurality of storage-side links integrated in the switch and connected to the

plurality of storage devices (figure 4, where elements 36, 24 and 36B, 24' are the

10   storage devices and the links between them and element 32 are the storage-side links)

and each including a storage-side interface between the switch and a corresponding

one of the storage devices, the storage-side interface sending and receiving data to and

from the corresponding storage device (figure 4, where the physical links between 24

and 24' are storage-side interfaces and clearly send and receive data from the storage

15   device); and..."

However, Brendel et al. lack "a switch matrix integrated in the switch and

connected to the host-side link and the storage-side links and operative to establish

communication channels between the host-side link and any of the storage-side links for

transferring message packets including the data between the host device and any of the

20   storage devices." Opher et al. however, disclose "a switch matrix integrated in the

switch and connected to the host-side link and the storage-side links and operative to

establish communication channels between the host-side link and any of the storage-

side links for transferring message packets including the data between the host device

and any of the storage devices (figure 2, element 202 is a switch fabric that will be used

as element 32 in Brendel; figure 8A are the contents of element 202; and col. 10, lines

8-13 show that the contents of element 202 can include "alternate switching fabrics"

5   which include a matrix switching fabric as can be read in col. 2, lines 36-45)."

It would have been obvious to one with ordinary skill in the art at the time of

invention to include the storage network with the matrix switch for the purpose of

transporting packets of data to their appropriate destinations. The motivation is to

effectively communicate data between two or more ends.

10

Allowable Subject Matter

Claims 3, 4, 6-10, and 16-21 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

15

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Chen et al. (U.S. Patent 5,822,524) shows communication

channels between storage devices and host devices. Latif et al. (U.S. Patent 6,400,730

20   B1) shows a switch fabric having interfaces connecting to the two device ends

connected to the switch. Colby et al. (U.S. Patent 6,006,264) shows a switch connecting

host devices and storage devices. Lowery et al. (U.S. Patent 5,894,554) shows a switch

type device connecting storage devices and host devices.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

5   policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

10   shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

15   *Response to Arguments*

The objections of claims 1, 3, and 5 are withdrawn due to applicant's

amendments filed 2 February 2004.

Applicant's arguments filed 2 February 2004 have been fully considered but they

20   are not persuasive.

Applicant argues that for claim 1, Brendel does not teach or suggest "a switch

matrix connected to a host-side". Examiner agrees with applicant but points to the fact

that it is never suggested that Brendel teaches "a switch matrix connected to a host-

side". Rather it is suggested the combination of Brendel's router (which acts as a switch

5   as is commonly known in the art) with Opher's switch matrix teaches "a switch matrix

connected to a host-side".

Further applicant argues that the combination of Brendel with Opher fails to teach

"a switch matrix connected to both the host side link and the storage side links for

bidirectional communication". Examiner respectfully disagrees. Through figures 2 and

10   8A of Opher, it is clear that the switch matrix can communicate bi-directionally,

especially figure 2 by way of the I/O ports. It should also be stated that the switch matrix

and only the switch matrix of figures 2 and 8A of Opher is used in combination with

Brendel.

15   Applicant argues that for claim 15, Brendel and Opher do not teach or suggest

"establishing one of the data transfer paths between the host device and the selected

storage device though the switch fabric... transferring data between the host device and

the selected storage device in response to the data access request through the

established data transfer path in the switched fabric between the host device and the

20   selected storage device". Examiner respectfully disagrees. As stated in the claim 15

rejection above, Opher clearly defines a path established through the switch fabric from

the input to the output (and thus transferring of data), and when taken in combination

with Brendel's router (which is taken to be the functional equivalent of a switch fabric and thus uses Opher's switch fabric) the inputs are connected to the host device and the storage devices are connected to the outputs.

5   Applicant argues the for claim 22, Brendel and Opher do not teach or suggest "a host-side link integrated in the switch and connected to the host device...sending and receiving data to and from the host device...a switch matrix integrated in the switch and connected to the host-side link and the storage-side links and operative to establish communication channels between the host-side link and the storage-side links".

10   Examiner respectfully disagrees. As with claims 1 and 15, Brendel and Opher do disclose established communication channels and a switch matrix connecting a host device with a storage device. The interfaces on both the host-side and the storage-side are inherent in the connections of the switch to the devices. That is, any time there is a device connected to another device, there is/are interfaces that allow the two devices to

15   connect. Also, Brendel specifically discloses sending and receiving data to and from the host device as web page requests and answers to those requests.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (703) 305-

20   0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

5   Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

10   Business Center (EBC) at 866-217-9197 (toll-free).

                                                        Joshua Kading
                                                        Examiner
                                                        Art Unit 2661

April 8, 2004

KENNETH VANDERPUYE
PRIMARY EXAMINER